



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/708,452

03/04/2004

Charles N. Archie

FIS920030082

2451

23389

7590

10/03/2005

SCULLY SCOTT MURPHY & PRESSER, PC  
400 GARDEN CITY PLAZA  
SUITE 300  
GARDEN CITY, NY 11530

EXAMINER

HARRISON, MONICA D

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-7

**Office Action Summary**

Application No.

10/708,452

Applicant(s)

ARCHIE ET AL.

Examiner

Monica D. Harrison

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/4/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Cha et al (6,355,563 B1).

1. Regarding claim 1, Cha et al discloses a method for high resolution cross sectioning of polysilicon features with a dual electron (E) beam and focused ion beam, comprising consecutive steps of: encapsulating the polysilicon features of interest (Figure 2, reference 20) with a metal coating (Figure 7, reference 40); ion beam cross sectioning of the metal encapsulated polysilicon features; Figure 5, reference 30; column 3, lines 28-38); electron (E) beam and etching gas etching and cleaning of the polysilicon from the encapsulating metal to remove the polysilicon while leaving the polysilicon surface features preserved in the encapsulating metal (column 2, lines 26-35).

2. Regarding claim 2, Cha et al discloses wherein the method is practiced with a dual beam tool comprising an electron (E) beam and focused ion beam tool (column 3, lines 28-30).

3. Regarding claim 9, Cha et al discloses wherein the step of encapsulating includes encapsulating the polysilicon features of interest with an E (electron) beam initiated metal coating wherein the E beam energizes and speeds up metal deposition during the encapsulating

Art Unit: 2813

step while resulting in minimized damage to the features of interest (Figure 7, reference 40, *copper*; Figure 5, reference 30).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-8, 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cha et al (6,355,563 B1) in view of Musil et al (6,753,538 B2).

4. Cha et al discloses all above claimed subject matter except the scanning electron microscope (claims 3 and 12), the step of etching and cleaning is followed by scanning electron (SEM) imaging and evaluation of the metal microscope preserved polysilicon features (claims 5 and 7), etching gas  $\text{XeF}_2$  (claims 6, 8 and 10), platinum (claim 13) and tungsten (claim 14).

Musil et al discloses the scanning electron microscope (Figure 1, reference 101), the step of etching and cleaning is followed by scanning electron (SEM) imaging and evaluation of the metal microscope preserved polysilicon features (column 7, lines 6-12), etching gas  $\text{XeF}_2$  (column 6, lines 26-33), platinum (column 13, line 19)) and tungsten (column 13, line 31).

Since Cha et al and Musil et al are both from the same field of endeavor, the purpose disclosed by Musil et al would have been recognized in the pertinent art of Cha et al.

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Cha et al with the teachings of Musil et al for the purpose of electron beam processing using an electron beam activated gas to etch or deposit material.

Art Unit: 2813

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cha et al (6,355,563 B1).

5. Cha et al discloses polysilicon (Figure 2, reference 20) however, Cha et al does not disclose the polysilicon features having the specified dimensions.

However, it would have been obvious, at the time the invention was made, for one having ordinary skill in the art, to provide a polysilicon features having dimensions of 90 nm or smaller, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the "optimum range" involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (1955).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Application/Control Number: 10/708,452

Page 5

Art Unit: 2813

Monica D. Harrison  
AU 2813

mdh  
September 28, 2005

A handwritten signature in black ink, appearing to read 'Laura M. Schillinger', written in a cursive style.

LAURA M. SCHILLINGER  
PRIMARY EXAMINER